

Compact Guide Cylinder

Series *MGP*

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

MGP M 25 - 30 Z - M9BW

Compact Guide Cylinder

Bearing type

M	Slide bearing
L	Ball bushing
A	High precision ball bushing

Bore size

12	12 mm	40	40 mm
16	16 mm	50	50 mm
20	20 mm	63	63 mm
25	25 mm	80	80 mm
32	32 mm	100	100 mm

Port thread type

—	M5 x 0.8
	Rc
TN	NPT
TF	G

* For bore sizes ø12 and ø16, only M5 x 0.8 is available.

Auto switch

—	Without auto switch (Built-in magnet)
---	---------------------------------------

* For applicable auto switches, refer to the table below.

Number of auto switches

—	2 pcs.
S	1 pc.
n	n pcs.

Made to Order
For details, refer to page 4.

Cylinder stroke [mm]
Refer to "Standard Strokes" on page 4.

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length [m]				Pre-wired connector	Applicable load	
					DC		AC	Perpendicular	In-line	0.5 (—)	1 (M)	3 (L)	5 (Z)			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
	3-wire (PNP)			12 V		M9PV		M9P	●	●	●	○	○			
	2-wire			12 V		M9BV		M9B	●	●	●	○	○			
	3-wire (NPN)			5 V, 12 V		M9NWV		M9NW	●	●	●	○	○	IC circuit		
	3-wire (PNP)			12 V		M9PWV		M9PW	●	●	●	○	○			
	2-wire			12 V		M9BWV		M9BW	●	●	●	○	○	—		
	3-wire (NPN)			5 V, 12 V		M9NAV***		M9NA***	○	○	●	○	○	IC circuit		
	3-wire (PNP)			12 V		M9PAV***		M9PA***	○	○	●	○	○			
	2-wire			—		M9BAV***		M9BA***	○	○	●	○	○	—		
	2-wire (Non-polar)			—		—		P3DWA**	●	—	●	●	○			
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	Relay, PLC
				2-wire	24 V	12 V	100 V	A93V	A93	●	—	●	●	—	—	
			100 V or less			A90V	A90	●	—	●	—	—	—	IC circuit		

*** Water resistant type auto switches are mountable on the above models, but in such case SMC cannot guarantee water resistance.

A water resistant type cylinder is recommended for use in an environment which requires water resistance.

However, please contact SMC for water resistant products of ø12 and ø16.

* Lead wire length symbols: 0.5 m..... — (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ

* Solid state auto switches marked with "○" are produced upon receipt of order.

** The D-P3DWA is mountable on bore size ø25 to ø100.

* Since there are other applicable auto switches than listed above, refer to the **Auto Switch Guide** for details.

* For details about auto switches with pre-wired connector, refer to the **Auto Switch Guide**.

For the D-P3DWA, refer to the **D-P3DWA catalogue**.

* Auto switches are shipped together, (but not assembled).

Specifications

Bore size [mm]	12	16	20	25	32	40	50	63	80	100
Action	Double acting									
Fluid	Air									
Proof pressure	1.5 MPa									
Maximum operating pressure	1.0 MPa									
Minimum operating pressure	0.12 MPa		0.1 MPa							
Ambient and fluid temperature	-10 to 60°C (No freezing)									
Piston speed ^{Note)}	50 to 500 mm/s								50 to 400 mm/s	
Cushion	Rubber bumper on both ends									
Lubrication	Not required (Non-lube)									
Stroke length tolerance	$^{+1.5}_0$ mm									

Note) Maximum speed with no load.

Make a model selection, considering a load according to the graph on pages 9 to 15.

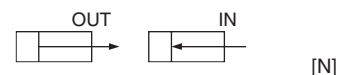
Standard Strokes

Bore size [mm]	Standard stroke [mm]
12, 16	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250
20, 25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400
32 to 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

Manufacture of Intermediate Strokes

Description	Spacer installation type Spacers are installed in the standard stroke cylinder. • ø12 to ø32: Available by the 1 mm stroke interval. • ø40 to ø100: Available by the 5 mm stroke interval.		Exclusive body (-XB10) Dealing with the stroke by making an exclusive body. • All bore sizes are available by the 1 mm interval.	
Model no.	Refer to "How to Order" for the standard model numbers.		Add "-XB10" to the end of standard model number. For details, refer to "Made to Order."	
Applicable stroke [mm]	ø12, ø16	1 to 249	ø12, ø16	11 to 249
	ø20, ø25, ø32	1 to 399	ø20, ø25	21 to 399
	ø40 to ø100	5 to 395	ø32 to ø100	26 to 399
Example	Part no.: MGPM20-39Z A spacer 1 mm in width is installed in the MGPM20-40. C dimension is 77 mm.		Part no.: MGPM20-39Z-XB10 Special body manufactured for 39 stroke. C dimension is 76 mm.	

Theoretical Output

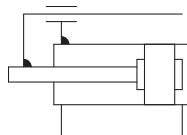


Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
12	6	OUT	113	23	34	45	57	68	79	90	102	113
		IN	85	17	25	34	42	51	59	68	76	85
16	8	OUT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	75	90	106	121	136	151
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	141	165	188	212	236
25	10	OUT	491	98	147	196	245	295	344	393	442	491
		IN	412	82	124	165	206	247	289	330	371	412
32	14	OUT	804	161	241	322	402	483	563	643	724	804
		IN	650	130	195	260	325	390	455	520	585	650
40	14	OUT	1257	251	377	503	628	754	880	1005	1131	1257
		IN	1103	221	331	441	551	662	772	882	992	1103
50	18	OUT	1963	393	589	785	982	1178	1374	1571	1767	1963
		IN	1709	342	513	684	855	1025	1196	1367	1538	1709
63	18	OUT	3117	623	935	1247	1559	1870	2182	2494	2806	3117
		IN	2863	573	859	1145	1431	1718	2004	2290	2576	2863
80	22	OUT	5027	1005	1508	2011	2513	3016	3519	4021	4524	5027
		IN	4646	929	1394	1859	2323	2788	3252	3717	4182	4646
100	26	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7323	1465	2197	2929	3662	4394	5126	5858	6591	7323

Note) Theoretical output [N] = Pressure [MPa] x Piston area [mm²]



Symbol
Rubber bumper



Made to Order
(For details, refer to pages 44 to 55.)

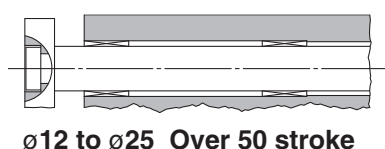
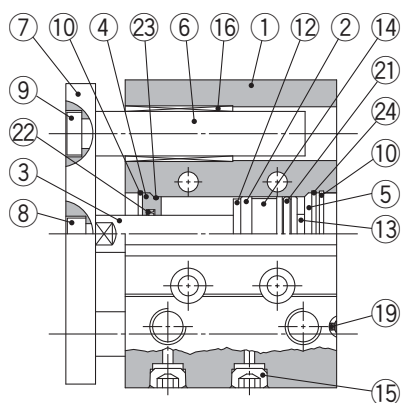
Symbol	Specifications
-XA □	Change of guide rod end shape
-XB6	Heat resistant cylinder (-10 to 150°C)
-XB10	Intermediate stroke (Using exclusive body)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC4	With heavy duty scraper
-XC6	Made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC22	Fluororubber seal
-XC35	With coil scraper
-XC79	Tapped hole, drilled hole, pinned hole machined additionally
-XC82	Bottom mounting type
-XC85	Grease for food processing equipment
-X144	Symmetrical port position
-X867	Side porting type (Plug location changed)

Refer to pages 40 to 42 for cylinders with auto switches.

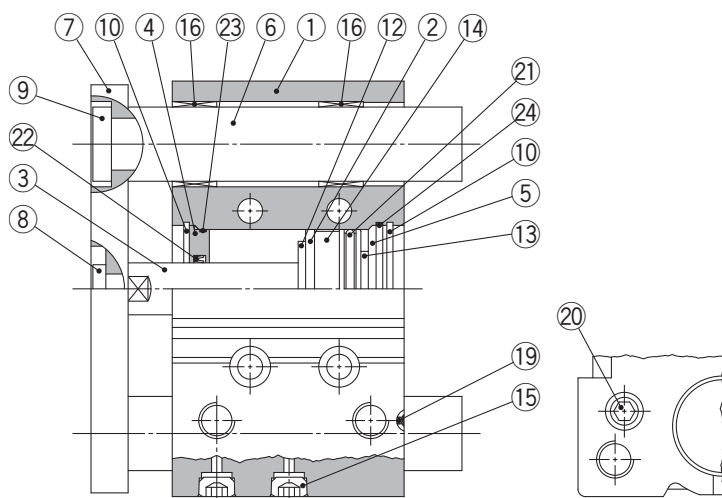
- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Construction/Series MGPM

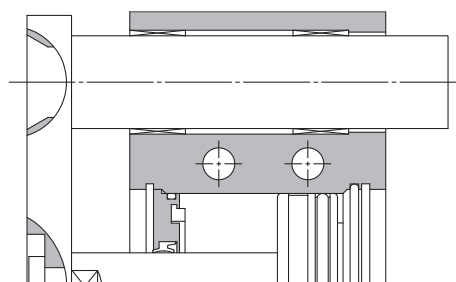
MGPM12 to 25



MGPM32 to 100



ø63 or more



ø50 or more

Component Parts

No.	Description	Material	Note
1	Body	Aluminium alloy	Hard Anodised
2	Piston	Aluminium alloy	Chromated
3	Piston rod	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100 Hard chrome plating
4	Collar	Aluminium alloy	Chromated
5	Head cover	Aluminium alloy	ø12 to ø63 Chromated
			ø80, ø100 Painted
6	Guide rod	Carbon steel	Hard chrome plating
7	Plate	Carbon steel	Nickel plating
8	Plate mounting bolt	Carbon steel	Nickel plating
9	Guide bolt	Carbon steel	Nickel plating
10	Retaining ring	Carbon tool steel	Phosphate coated
11	Retaining ring	Carbon tool steel	Phosphate coated
12	Bumper A	Urethane	
13	Bumper B	Urethane	
14	Magnet	—	
15	Plug	Carbon steel	ø12, ø16 Nickel plating
	Hexagon socket head plug		ø20 to ø100
16	Slide bearing	Bearing alloy	

Component Parts

No.	Description	Material	Note
17	Ball bushing		
18	Spacer	Aluminium alloy	
19	Steel ball	Carbon steel	ø12 to ø50
20	Plug	Carbon steel	ø63 to ø100 Nickel plating
21*	Piston seal	NBR	
22*	Rod seal	NBR	
23*	Gasket A	NBR	
24*	Gasket B	NBR	

Replacement Parts/Seal Kit

Bore size [mm]	Kit no.	Contents	Bore size [mm]	Kit no.	Contents
12	MGP12-Z-PS	Set of	40	MGP40-Z-PS	Set of
16	MGP16-Z-PS	nos.	50	MGP50-Z-PS	nos.
20	MGP20-Z-PS	above	63	MGP63-Z-PS	above
25	MGP25-Z-PS	②1, ②2	80	MGP80-Z-PS	②1, ②2
32	MGP32-Z-PS	②3, ②4	100	MGP100-Z-PS	②3, ②4

* Seal kit includes ②1 to ②4. Order the seal kit, based on each bore size.

* Since the seal kit does not include a grease pack, order it separately.

Grease pack part number: GR-S-010 (10 g)